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File 351:Derwent WPI 1963-2006/UD,UM &UP=200624

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S1	1	PN=EP 575353

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DIALOG(R)File 351:Derwent WPI

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009157262

WPI Acc No: 1992-284708/199234

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Paper-making press appts. - has internally lubricated blanket urged  
towards nip roll by shoe non-concave towards counter-roll

Patent Assignee: NYKOPP E (NYKO-I)

Inventor: NYKOPP E

Number of Countries: 017 Number of Patents: 005

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
WO 9213134	A1	19920806	WO 92SE41	A	19920124	199234 B
SE 467668	B	19920824	SE 91213	A	19910124	199237
EP 575353	A1	19931229	EP 92904341	A	19920124	199401
			WO 92SE41	A	19920124	
EP 575353	B1	19950802	EP 92904341	A	19920124	199535
			WO 92SE41	A	19920124	
DE 69203860	E	19950907	DE 603860	A	19920124	199541
			EP 92904341	A	19920124	
			WO 92SE41	A	19920124	

Priority Applications (No Type Date): SE 92200 A 19910815; SE 91213 A  
19910124

Cited Patents: EP 147352; EP 389458; US 4431045

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
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WO 9213134	A1	E	11	D21F-003/02	
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Designated States (National): JP US

Designated States (Regional): AT BE CH DE DK ES FR GB GR IT LU MC NL SE

EP 575353	A1	E		D21F-003/02	Based on patent WO 9213134
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Designated States (Regional): AT BE CH DE DK ES FR GB GR IT LI LU MC NL  
SE

EP 575353	B1	E	8	D21F-003/02	Based on patent WO 9213134
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Designated States (Regional): AT BE CH DE DK ES FR GB GR IT LI LU MC NL  
SE

DE 69203860	E			D21F-003/02	Based on patent EP 575353
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Based on patent WO 9213134

SE 467668	B			D21F-003/02	
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Abstract (Basic): WO 9213134 A

Moving web pressing appts., comprises a nip roll against a part of the surface of which the web is urged by a blanket which is internally lubricated (10,12), and loaded by an internal shoe which is non-concave towards a counter-roll.

Specifically the shoe is internally pressurised to compensate for deflections of the press roll (4) and the counter-roll.

USE/ADVANTAGE - Desired pressure is maintained along the lengths of the rolls (4,14) of a papermaking press, for dewatering or finishing purposes.

Dwg.0/7

Title Terms: PAPER; PRESS; APPARATUS; INTERNAL; LUBRICATE; BLANKET; NIP; ROLL; SHOE; NON; CONCAVE; COUNTER; ROLL

Derwent Class: F09

International Patent Class (Main): D21F-003/02

File Segment: CPI

19



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12

## EUROPEAN PATENT SPECIFICATION

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### 54 PRESS ARRANGEMENT FOR A MOVING WEB.

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|--|--|
| 30 Priority: 24.01.91 SE 9100213<br>15.08.91 SE 9100200  | 73 Proprietor: <b>NYKOPP, Erik</b><br><b>Larsbergsvägen 55</b><br><b>S-181 38 Lidingö (SE)</b>   |
| 43 Date of publication of application:<br>29.12.93 Bulletin 93/52                                  | 72 Inventor: <b>NYKOPP, Erik</b><br><b>Larsbergsvägen 55</b><br><b>S-181 38 Lidingö (SE)</b>   |
| 45 Publication of the grant of the patent:<br>02.08.95 Bulletin 95/31                              | 74 Representative: <b>Franzén, Lars Hjalmar et al</b><br><b>AWAPATENT AB,</b><br><b>Södra Hamngatan 37-41,</b><br><b>P.O. Box 11394</b><br><b>S-404 28 Göteborg (SE)</b> |
| 84 Designated Contracting States:<br><b>AT BE CH DE DK ES FR GB GR IT LI LU MC</b><br><b>NL SE</b> |  |
| 56 References cited:<br><b>EP-A- 0 147 352</b><br><b>EP-A- 0 389 458</b><br><b>US-A- 4 431 045</b> |  |

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## Description

The present invention concerns a press arrangement for a moving web, comprising a cylindrical roll which forms a press zone with a glide belt supported by a shoe so formed that it brings the glide belt into press contact with a part of the roll circumference to form a nip and including lubricating means for obtaining a lubricating film between the belt and the shoe, and a counter roll located on the opposite side of the shoe from the press roll.

### Technical stand

In prior art, a press arrangement is known thru EPO publication 0147352 or US-A-4 431 045 wherein the surface of the shoe in contact with the counter roll is concave and follows the contour of the counter roll. Thus the shoe is locked in a definite position between the press- and counter-rolls and consequently cannot be adjusted. Moreover, at least one of the rolls has to be of the deflection compensating type in order to achieve an even load distribution along the width. Such rolls are very expensive.

Examples of the general technical stand are also divulged thru DE Offenlegungsschrift 33 17 455 and EPO publication 0070869.

### Description of the invention

One main purpose with the present invention is to achieve a press arrangement of the general type indicated in the introduction which makes it possible to adjust the position of the shoe around the center line of the press roll. Another purpose is to obtain a press arrangement which can be realized with regular and thus relatively inexpensive rolls.

This has been achieved in the present invention by a non-concave contour of the shoe on the side towards the counter roll.

To compensate for deflection of the press- and counter-rolls there are in a preferred embodiment, loading arrangements inside the shoe to deform it so as to compensate for roll deflection and achieve desired load distribution throughout the width of the pressure zones between the shoe and the rolls.

In order to achieve a perfect gliding support for the belt on the shoe the surface of the shoe in the area of the nip is in continuous contact with the belt via a lubricating film, from the entrance of the nip and the lubricating means including openings for introducing the lubricant under pressure in the load zones and canals for pressure equalization and removal of lubricant.

In a preferred embodiment of the invention the shoe is adjustable within limits around the center

line of the press roll. This allows adjustment to a desired pressure profile in the direction of motion in the nip.

### Brief description of the drawings

The invention shall now be elucidated in the following with reference to schematically illustrated arrangements on the attached drawings. Thus on the drawings

fig. 1 is an endview of the embodiment of the invention as a partial crosssection,

fig. 2 is a sideview of the mechanism in accordance with fig. 1 as a partial transverse vertical section,

fig. 3 is a transverse vertical section of shoe in accordance with the invention, to illustrate the flow of lubricant,

fig. 4 is a partial endview of the embodiment, where the crosssection of the upper part of the shoe is shown to illustrate the introduction of lubricant to the nip area between the press roll and the shoe, and

fig. 5 shows an endview of an embodiment of the mechanism according to the invention to illustrate the adjustability of the shoe around the centerline of the press roll.

### Description of preferred embodiments

In the various drawings identical reference numbers are used to indicate the same or similar details.

Figs. 1 and 2 show a press arrangement for a moving web 2. The arrangement includes a press-nip for receiving the moving web, formed between a cylindrical press roll 4 and a glide belt 6. The glide belt is slidably supported on and wraps a shoe 8 with such a form that it makes the glide belt follow a part of the circumference of roll 4 to form the nip. Supply mechanisms 10 are provided to supply lubricant for a lubricating film via canals 12 between the glide belt 6 and shoe 8.

The shoe 8 is supported by counter roll 14 which is situated on the opposite side of the shoe relative to the press roll 4, whereby the side 15 of the shoe 8 facing the counter roll 14 is non-concave.

Inside the shoe 8 there are generally with 16 indicated loading mechanisms to enable deforming of the shoe to compensate for deflection of the press roll 4 and the counter roll 14 in operation, so that desired loads always are maintained throughout the width. These loading mechanisms 16 may be e.g. pressure cylinders or bellows. To illustrate the principle, a number of bellows 18 along the width of the shoe 8 are shown in fig. 2. Arrows 20 indicate the external loads on the roll journals 22,

which cause said rolls to deflect in operation.

One embodiment of the nip area, as well as lubricant supply to the arrangement according to the invention shall now be described in more detail with reference to figs. 3 and 4. The side of the shoe 8 which faces the outside 24 of the glide belt 6 and encompasses the segment 26 which forms the nip is in unbroken contact with the glide belt 6 via the lubricating film, at least in the transition areas indicated by arrows 28. A supply duct 30 for lubricant is connected with nozzles 32 for the supply of lubricant under pressure between the shoe 8 and glide belt 6 in the nip area. A further supply duct 34 with nozzles 36, as well as equalizing canals 38 are also shown.

The duct 30 is connected to a lubricant supply pipe 40, whereby the corresponding return pipe is shown at 42. With 44 is indicated an endring which rotates with the glide belt. The endring 44 is fixed with a connection including a stopring 46 and a bolt 48 screwed into the flange 50 on the shoe 8.

The shoe 8 is further adjustable within limits around the centerline 51 of the press roll 4 which is schematically illustrated in fig. 5 with arrow 52. This adjustment of the shoe 8 can be realized in a manner not shown here by introducing forces on the endflanges 50. The adjustability of the shoe 8 makes it possible to optimize web geometry before and after the nip, as well as to influence the pressure profile in the nip. The latter is demonstrated by a pressure diagram 54 drawn onto the figure.

When practical solutions of details in the press arrangement according to the invention have not been described more comprehensively, they fall within known or customary practice in the art to which this invention pertains and are easily perceived by the expert.

The invention can be applied e. g. to remove water from a moving web in a papermachine, whereby the web is fed into the nip in a conventional manner together with one or two felts which receive the water. Another area of use is surface finishing of the web further on in the process.

## Claims

1. Press arrangement for a moving web (2), comprising a press nip formed between a cylindrical press roll (4) and a glide belt (6), which is slidingly supported by, and wraps a shoe (8) having such a form that it makes the belt contact a part of the circumference of the roll (4) to form the nip, whereby supply mechanisms (10,12) are provided to supply lubricant for a lubricating film between the belt and the shoe, and the shoe (8) is supported by a counter roll (14), which is situated on the opposite side of the shoe relative the press roll

(4), characterized in that the side (15) of the shoe (8) towards the counter roll (14) is non-concave.

2. Press arrangement according to claim 1, characterized by loading mechanisms (16) inside the shoe (8) for deforming the shoe to compensate for deflection of the press roll (4) and the counter roll (14) in operation, so that desired loads always are maintained throughout the width.
3. Press arrangement according to claims 1 or 2, characterized in that the shoe (8) is adjustable within limits around the centerline (51) of the press roll (4).
4. Press arrangement according to anyone of the above claims, characterized in that the side of the shoe (8) which faces the outside (24) of the glide belt (6) and encompasses the segment (26), which forms the nip, is in unbroken contact with the glide belt (6) via the lubricating film, at least in the transition areas (28) of the nip section, and that said supply mechanisms (30) include nozzles (32) for the supply of lubricant under pressure between the shoe (8) and glide belt (6) in the nip area as well as canals for pressure equalization and removal of lubricant.

## Patentansprüche

1. Preßanordnung für eine sich bewegende Bahn (2) mit einem Preßspalt, der zwischen einer zylindrischen Preßwalze (4) und einem Gleitriemen (6) gebildet ist, der von einem Schuh (8) verschieblich gehalten ist und diesen umschließt, wobei der Schuh (8) eine derartige Form besitzt, daß er den Riemen zur Bildung des Spalts in Kontakt mit einem Abschnitt des Umfangs der Walze (4) hält, wobei Fördervorrichtungen (10,12) vorgesehen sind, die Gleitmittel zur Bildung eines Gleitmittelfilms zwischen den Riemen und den Schuh fördern, und wobei der Schuh (8) von einer Gegenwalze (14) gehalten ist, die auf der relativ zu der Preßwalze (4) entgegengesetzten Seite des Schuhs angeordnet ist, dadurch gekennzeichnet, daß die der Gegenwalze (14) zugewandte Seite (15) des Schuhs (8) nicht-konkav ist.
2. Preßanordnung nach Anspruch 1, gekennzeichnet durch eine Belastungsvorrichtung (16) innerhalb des Schuhs (8) zu dessen Deformierung, um das Ausweichen der Preßwalze (4) und der Gegenwalze (14) bei Betrieb zu kompensieren, so daß über die Breite stets ge-

wünschte Belastungen beibehalten werden.

3. Preßanordnung nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß der Schuh (8) in Grenzen um die Mittelachse (51) der Preßwalze (4) einstellbar ist. 5
4. Preßanordnung nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß diejenige Seite des Schuhs (8), die der Außen- 10 seite (24) des Gleitriemens (6) zugewandt ist und den den Spalt bildenden Abschnitt umfaßt, über den Gleitmittelfilm zumindest in den Übertragungsbereichen (28) des Spaltabschnitts in ununterbrochenem Kontakt mit dem 15 Gleitriemen (6) steht, und daß die Fördervorrichtungen (30) Düsen (32) zur Zuführung des Gleitmittels unter Druck zwischen den Schuh (8) und den Gleitriemen (6) in dem Spaltbereich und Kanäle zum Druckausgleich und Ab- 20 leiten des Gleitmittels umfassen.

#### Revendications

1. Agencement de presse pour une bande en mouvement (2), comportant une zone de pression formée entre un rouleau de presse cylindrique (4) et une courroie glissante (6) qui est soutenue de façon glissante par un sabot (8) qu'elle enveloppe, ledit sabot (8) ayant une telle forme qu'il amène la courroie en contact avec une partie de la circonférence dudit rouleau (4) afin de former la zone de pression, des mécanismes d'alimentation (10, 12) étant prévus pour fournir du lubrifiant pour établir une couche de lubrifiant entre la courroie et le sabot, et ledit sabot (8) étant soutenu par un rouleau à contre-pression (14) qui est situé du côté opposé du sabot par rapport au rouleau de presse (4), **caractérisé** en ce que le côté (15) du sabot (8) faisant face au rouleau à contrepression (14) est non concave. 25 30 35 40
2. Agencement de presse selon la revendication 1, **caractérisé** en ce que des mécanismes de chargement (16) sont prévus à l'intérieur du sabot (8) pour déformer ce dernier afin de compenser la flèche du rouleau de presse (4) et du rouleau à contre-pression (14) en marche, de sorte que les charges voulues soient toujours maintenues sur la largeur entière. 45 50
3. Agencement de presse selon la revendication 1 ou 2, **caractérisé** en ce que le sabot (8) peut être ajusté dans des limites autour de l'axe (51) du rouleau de presse (4). 55
4. Agencement de presse selon l'une quelconque des revendications précédentes, **caractérisé** en ce que le côté du sabot (8) qui fait face à l'extérieur (24) de la courroie glissante (6) et entoure le segment (26) formant la zone de pression, est en contact continu avec la courroie glissante (6) par l'intermédiaire de la couche de lubrifiant, au moins dans les régions de transition (28) de la zone de pression, et que lesdits mécanismes d'alimentation (30) comportent des buses (32) d'alimentation en lubrifiant sous pression entre le sabot (8) et la courroie glissante (6) dans la zone de pression, ainsi que des conduits d'égalisation de pression et d'enlèvement de lubrifiant.

FIG. 1

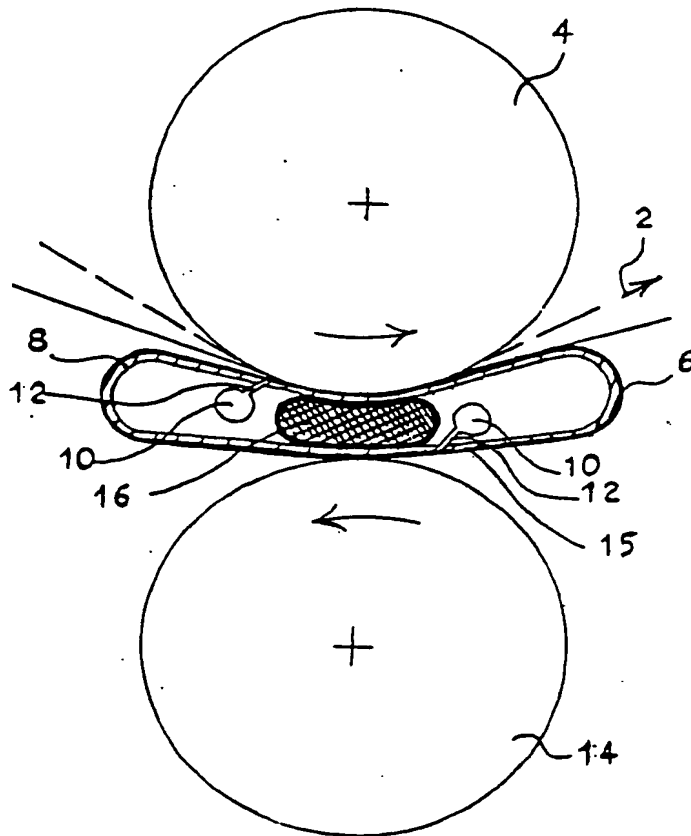
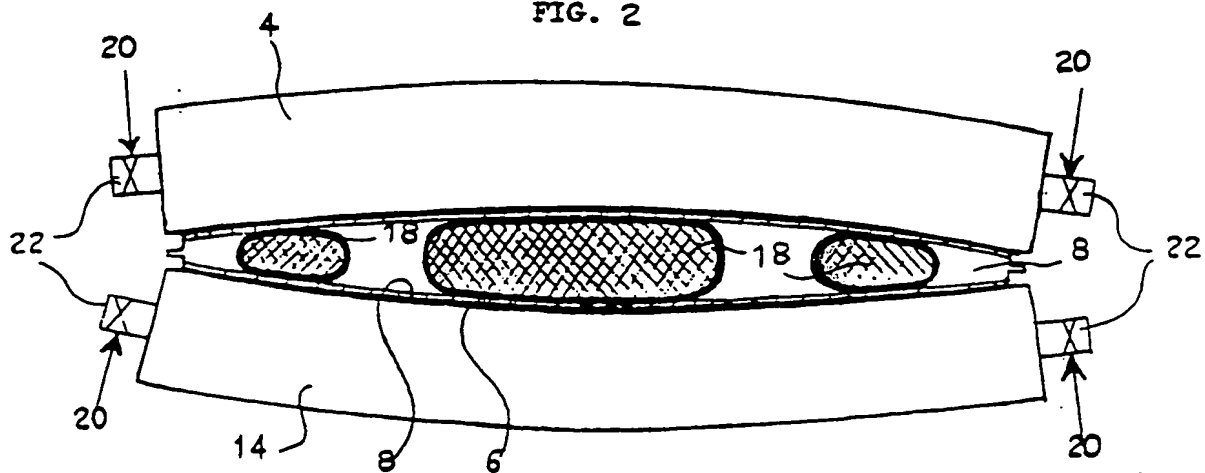


FIG. 2



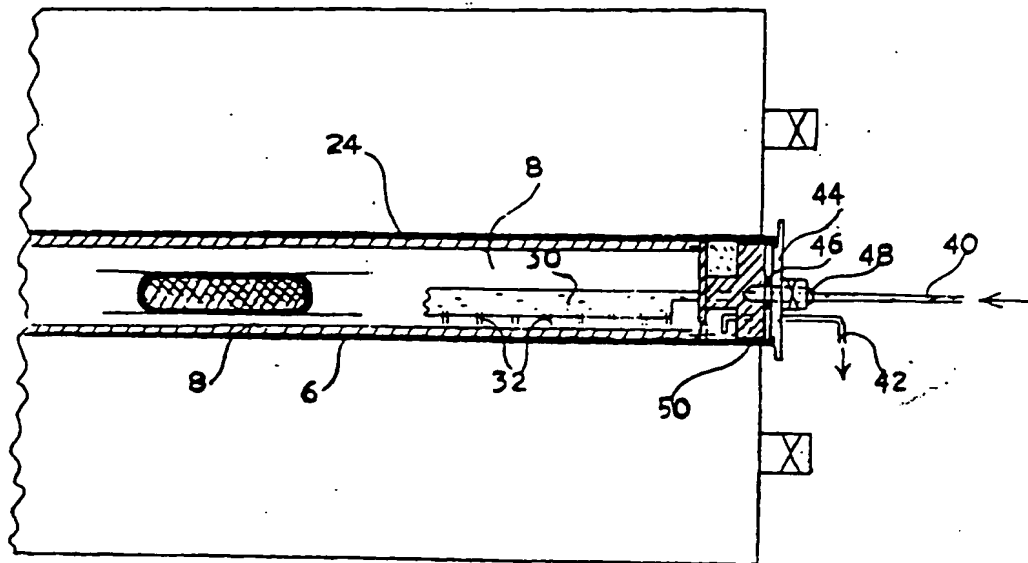


FIG. 3

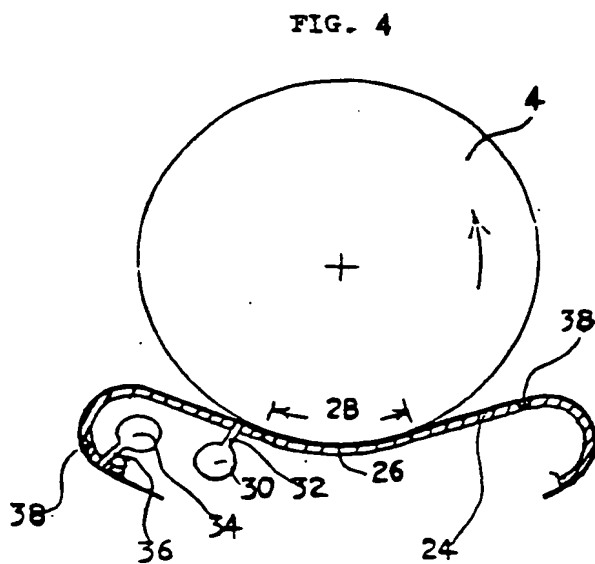


FIG. 4

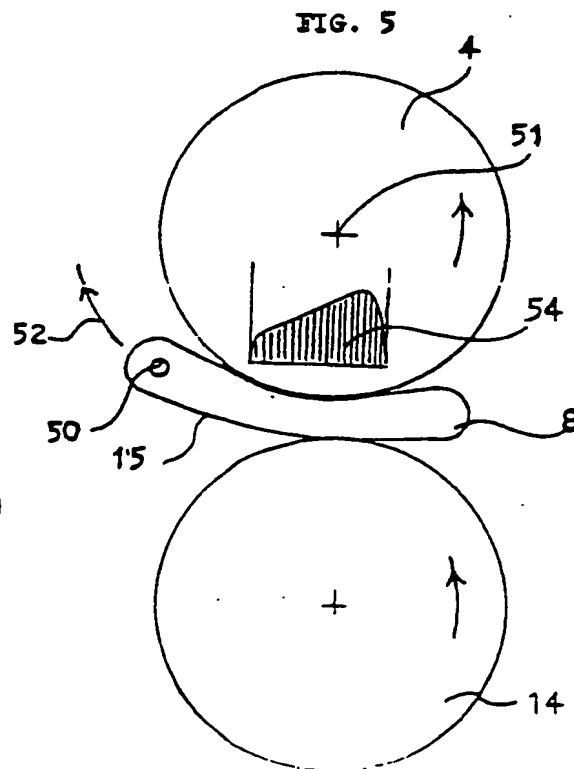


FIG. 5



Fig 6

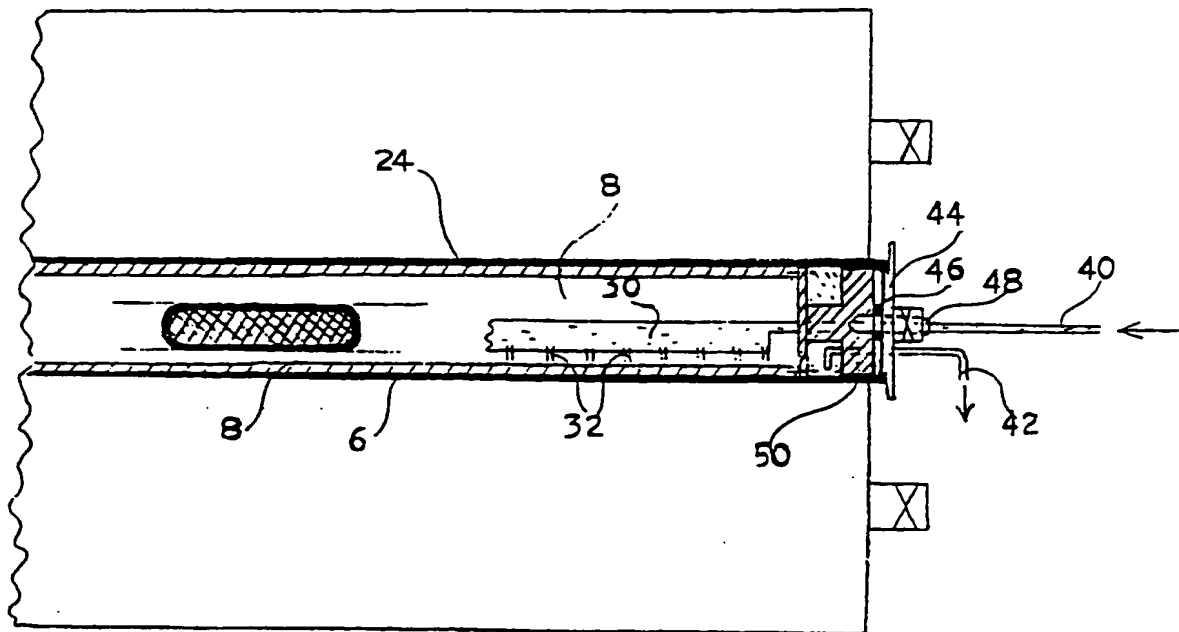


Fig 7

